Huron
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Georgia Institute of Technology
Strategic Economic Development Study

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Agenda

- Project objective and approach
- The case for change
  - Global factors
  - The competition
- Comparing Atlanta/Georgia to other successful regions
- Georgia Tech's economic impact
  - Sources of revenue
  - Leveraging state support
  - Overall economic impact
  - Impact of incubation/commercialization
  - Other economic impacts
- Key issues
  - Competitive, structural, and operational issues
  - Handicaps facing Georgia Tech
- How others are responding
- Recommendations

Project Objective and Approach

Project objective and approach

Objective:

Document the economic benefits of Georgia Tech for the Atlanta region and the State of Georgia; make recommendations to optimize its future impact.

Approach:

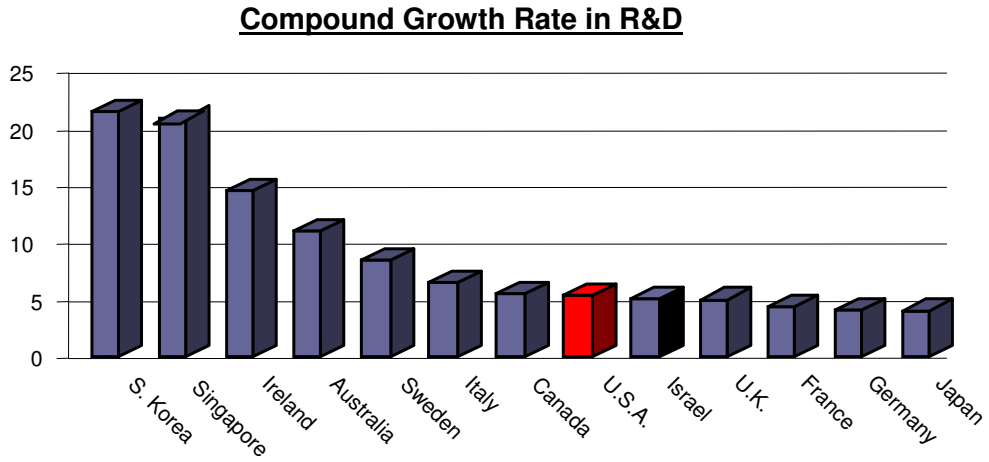
- Identify the challenges faced by Atlanta and Georgia as they seek to compete in a global economy driven by innovation and by Georgia Tech as it competes with peer universities across the nation and the world..
- Document Georgia Tech's economic impact.
- Review key issues that will increasingly hinder Georgia Tech's ability to serve as a key driver of high-end economic development.
- Identify strategies and recommendations to expand Georgia Tech's economic contribution to Atlanta and Georgia.

The Changing Competitive Environment

The changing competitive environment

Emerging global innovation-based economies will require that the Atlanta and Georgia economies become more competitive.

- Challenging to maintain current economic conditions, let alone achieve economic growth.
- U.S. companies moving high-end manufacturing jobs and R&D centers overseas, particularly to China and India; the U.S. is being out produced in engineers and scientists.
- U.S. dominance in science and engineering may be slipping as America's share of graduates in these fields has fallen relative to Europe and developing nations such as China and India.
- Federal R&D investments are flat while other countries are expanding R&D investments.



Source: National Science Foundation, 2000

The changing competitive environment

Georgia Tech faces challenges in growing its research, educational and economic development efforts as compared to private university peers.

- Georgia and Metro Atlanta are increasingly reliant on research universities, Georgia Tech particularly, to drive high end economic growth.
- To compete effectively in the fast paced, innovative global economy, research universities must be able to react quickly, create partnerships, help shape investments towards economic development targets, and adapt to changes in the economy and technology.
- Georgia Tech is increasingly collaborating with private universities like Emory in innovative new approaches to research, education and economic development.
- Georgia Tech continues to expand its global activities, typically by partnering with institutions in other countries.
- Georgia Tech must be in a position to anticipate and react immediately to market changes, and to make investments to get to the market first.
- Decreasing state support is forcing public universities to rely more on external revenue (state support now comprises less than 25% of Tech's operating budget).

Comparing Atlanta/Georgia to Other Successful Regions

A perspective on regional position

Strengths & Weaknesses:

Strengths

- Leading Industries in logistics, manufacturing, telecommunications, software, and transportation
- Headquarters for a large number of leading companies (Coca-Cola, Home Depot, United Parcel Service, etc)
- Quality of life, location, climate
- Large number of higher education institutions

Weaknesses

- Not among recognized leaders in innovation, science, and technology industries
- No national R&D lab and low industry R&D activity
- Low rate of venture capital investments
- Need for business development incentives

Regional success factors

Characteristics of Strong Regional Economies:

- Significant investment and support for research universities (mostly private)
- Significant public and private investments in emerging industries
- Favorable regulatory environment and incentives that encourage growth
- Strength in leadership among those that head industry, education, and politics
- Marketing initiatives and support that can impact public support
- Interconnected partnerships and alliances
- Strong companies that are committed to regional growth and innovation

By benchmarking the leading regions (Boston, Seattle, Silicon Valley, Austin, Raleigh/Durham) and identifying the strategies and initiatives that they have undertaken to be successful, an aspiring region such as Atlanta can develop the intellectual capital resources be world leader in the knowledge economy.

Regional success factors

Top economically performing regions based on GMP per capita and federal science & engineering research awards

Top Economically Performing Regions Highlighted Regions Show Strong Correlation b/w GMP & Federal S&E Awards				
Rank	Region	GMP Per Capita	Region	Federal S&E Awards
1	Boston	$67,861	Baltimore	$1,415,000
2	Raleigh Durham	$54,556	Los Angeles/Orange County	$1,019,000
3	San Francisco/Oakland	$52,549	San Francisco/Oakland	$1,018,000
4	Dallas	$49,837	New York/Nassau/Newark	$895,000
5	Washington DC-MD-VA-WV	$49,339	Boston	$843,000
6	San Jose	$47,146	Raleigh/Durham	$773,000
7	Denver	$46,805	San Diego	$603,000
8	San Diego	$45,845	Seattle	$577,000
9	Los Angeles/Orange County	$45,659	Detroit	$561,000
10	Minneapolis-St Paul, MN-WI	$45,473	Houston	$541,000
11	Seattle	$41,197	Denver	$500,000
12	Cleveland	$40,733	Chicago	$494,000
13	Houston	$40,421	Pittsburg	$488,000
14	Chicago	$40,227	Philadelphia	$480,000
15	**Atlanta**	$40,195	Madison	$394,000
16	Phoenix	$39,700	St. Louis	$381,000
17	New York/Nassau/Newark	$39,120	**Atlanta**	$338,000
18	Tampa-St Petersburg	$38,439	Cincinnati	$336,000
19	Detroit	$36,316	New Haven	$334,000
20	Philadelphia	$35,593	Minneapolis-St Paul, MN-WI	$327,000

Regional success factors

Top economically performing areas based on federal S&E awards and their local universities

Top Economically Performing Regions Based On Federal S&E Awards

Highlighted Areas Show Strong Correlation b/w GMP per Capita and Major Research Institutions

Rank	Region	Research Universities
1	Baltimore	John Hopkins, UM-College, UM-Baltimore
2	Los Angeles/Orange County	UCLA, USC, UC-Irvine
3	San Francisco/Oakland	Stanford, UC-San Fran, UC-Berkley
4	New York/Nassau/Newark	Columbia, NYU, Mt. Sinaii MS, CUNY
5	Boston	Harvard, MIT, Boston U.
6	Raleigh/Durham	Duke, UNC-CH, NC State
7	San Diego	UC-San Diego, Scripps Research Inst.
8	Seattle	Univ. of Washington
9	Detroit	U. Michigan, Wayne St.
10	Houston	Baylor Medical, U. Texas HS, UT-Houston
11	Denver	Univ. of Colorado,
12	Chicago	Northwestern, U. Chicago, UI-Chicago
13	Pittsburg	U. Pittsburg, Carnegia Mellon
14	Philadelphia	U. Pennsylvania
15	Madison	U. Wisconsin
16	St. Louis	Washington Univ
17	**Atlanta**	**Georgia Tech, Emory**
18	Cincinnati	Case Western, U. Cincinatti
19	New Haven	Yale
20	Minneapolis-St Paul, MN-WI	U. Minnesota

Georgia Tech's Economic Impact

Economic impact overview - summary

- In 2004, Georgia Tech received revenue of $889 million including:
  - $209 million in state operating funds
  - $55 million in state capital funds (non recurring)
  - $625 million in non-state appropriated funds
- $450 million, over 50% of Georgia Tech's total revenue, was attracted from sources outside the state of Georgia.
- The total economic impact of Georgia Tech expenditures was more than $2.2 billion.
- Georgia Tech stimulated the creation of more than 26,400 jobs in the state of Georgia, not including the 12,525 direct jobs created by Tech itself.
- Georgia Tech alumni, who graduated in 2004 and remained in Georgia will earn an estimated combined salary of $111 million and contribute nearly $7 million to the state in income tax revenue.
- The direct economic impact from ATDC (Georgia Tech incubator) firms included a 2004 employment level of more than 5,500, almost $1.7 billion in revenues, and almost $117 million in venture investment.
- The state's investment of $264 million in Georgia Tech created $2.2 billion in economic activity within the state of Georgia, a return of nearly $9 for ever $1 provided by the state.

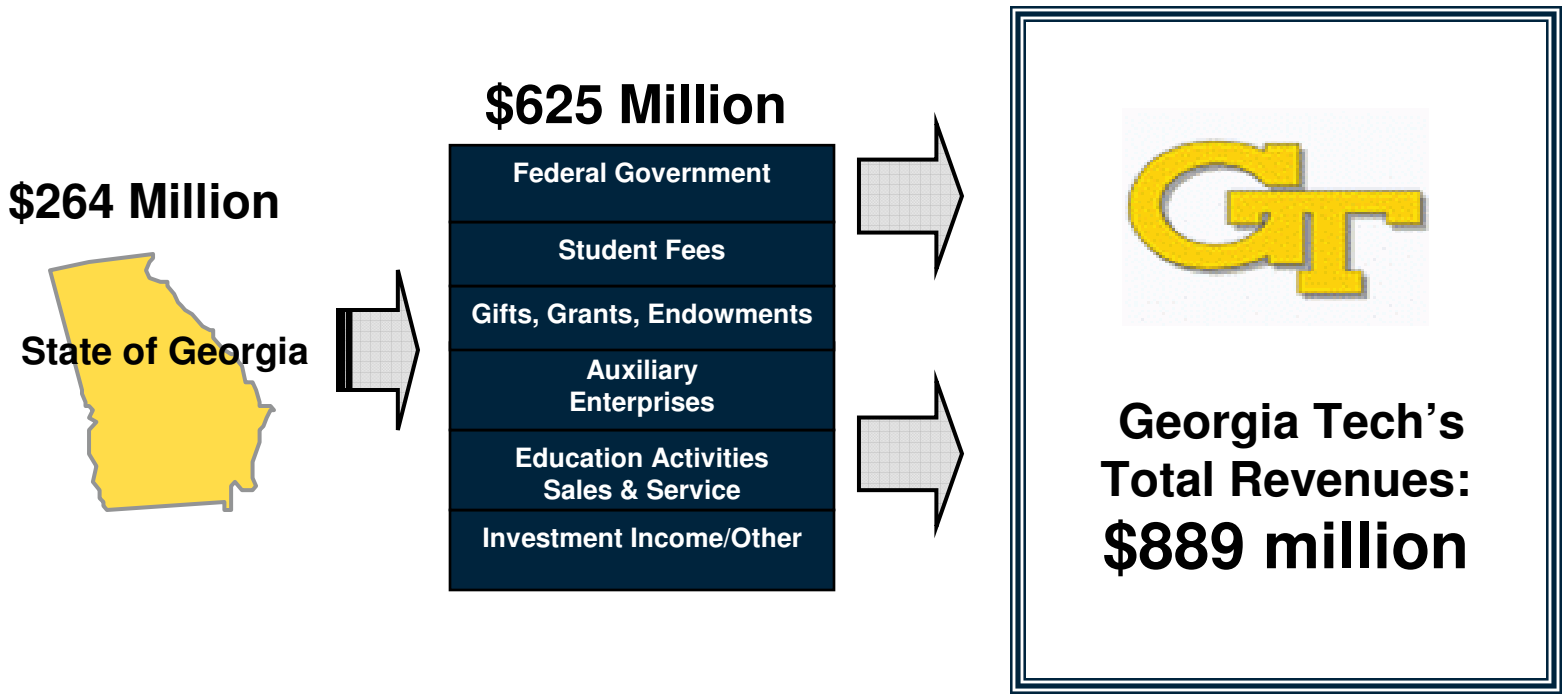
Sources of revenue

- In 2004, Georgia Tech received over $889 million in revenue from a wide range of sources; $264 million came from the State of Georgia and $625 million from sources other than the State of Georgia.

Georgia Institute of Technology 2004 Sources of Revenue (in million's)		
State Support		
Operating Appropriatio	$209	
Capital Appropriation	$55	
Total		**$264**
Federal Government		$266
Student Fees		$116
Gifts, Grants, Contracts		$153
Auxiliary Enterprises		$61
Sales and Services of Educational Departments		$15
Other		$14
Total		**$889 Million**

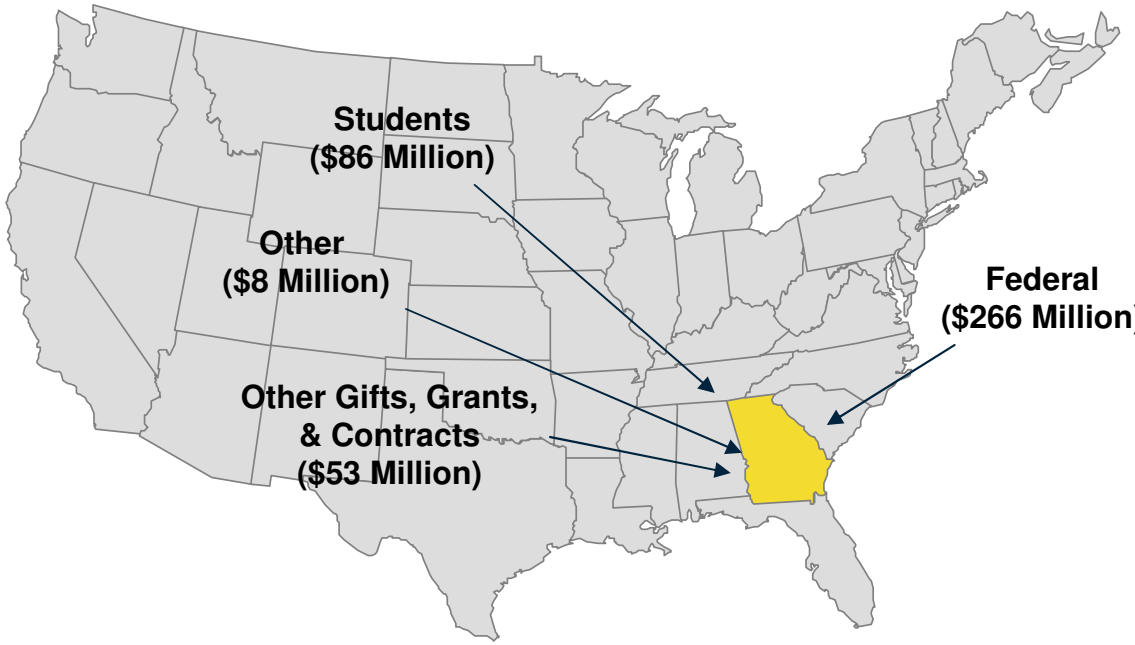
Leveraging state support

Georgia Tech's leverage of state support:



Revenue generated from outside the state

Georgia Tech attracts nearly $450M in revenue from sources outside of the State of Georgia.



Economic impact: technology transfer

Advanced Technology Development Center (ATDC)

A recent economic impact study emphasizes the significant value that ATDC, a Georgia Tech-managed and state of Georgia funded collaborative, has had on the economy.

Key findings on ATDC's member companies included:

- 2004 employment level of more than 5,500
- Economic Impact of $1.7 billion
- Received nearly $117 million in venture investment
- Delivered a 6.8% return on funding

Overall economic input/output model

Georgia Tech spent funds that stimulated a total economic impact of over $2.2 billion and an total employment impact of over 38,900 jobs to the state of Georgia.

Direct Impact FY 2004
$889 Million Expenditures
12,525 Jobs

Georgia Tech's Advanced Technology Development Center Economic Impact for FY 2004	
Revenue:	$1.7 Billion
Employment	5,500

Multiplier

Total Economic Impact FY 2004	
Georgia Tech	**$2.2 Billion**
State Taxpayers ROI	$9/$1

Total Employment Impact FY 2004	
Georgia Tech	**12,525 Jobs**
Indirect Job	**26,409 Jobs**
Total Impact	**38,934 Jobs**

Economic impact of alumni

- Georgia Tech, one of the nation's top ten public universities, has the largest engineering/computing program in the country, and substantial programs in the sciences, business and architecture.
- Annually Georgia Tech awards:
  - Over 2,500 baccalaureate degrees
  - Nearly 1,400 master's degrees
  - More than 300 PhD's
- 51% of Tech alumni who graduated in 2004 remain in the state, earning an annual combined salary of $111 million and paying nearly $7 million in state income taxes.
- Georgia Tech increases the earning power of alumni, since increased educational attainment leads to increased lifetime earnings.

Economic impact: technology transfer

Georgia Tech's Office of Technology Licensing

Georgia Tech's Office of Technology Licensing has also delivered a significant impact to the State of Georgia through the development of start-up companies, patents, licenses, etc.

Highlights Include:

Tech Transfer Measure	2001	2002	2003	2004
Start-up Companies Formed	8	7	10	15
Inventions, software and copyright disclosures	141	188	226	277
U.S. Patents Issued	35	40	41	35
Software licenses executed	16	39	37	22
Invention licenses executed	13	25	28	35
Office of Technology Licensing Total Licensing Income (in $000,000s)	4.6	2.24	2.4	2.32

Key Issues

Key issues

What inhibits Georgia Tech's ability to optimize its economic impact on the region and compete with top U.S and globally based research universities?

The competitive need

- Agility to anticipate and respond to changes before they occur
- Flexibility to generate and use financial resources to invest and respond to the changing opportunities

Structural issues

- Governance and management by the USG – how much of this is needed or value added, given the dramatic changes in our competitive landscape?
- Finance – state funding has declined as a percentage of our budget; cuts made in funding for economic development activities. Can a base on state funding be established that we can depend on and can we gain institutional flexibility to generate and use our own financial resources?
- Investments – is the state willing to make significant and strategic investments in special initiatives to compete with other states?

Key Issues (continued)

Operational Issues

- Compensation and benefits – we compete with the best for employees and faculty; how can our compensation and benefits reflect this?
- Revenue generation, management, and use (not just tuition); how can we be delegated greater control and flexibility?
- Procurement of goods and services – why not a new approach?
- Capital investments, facility design, financing and construction – BOR procedures lead to time delays and additional costs. Experience shows this does not have to be true.
- Public/private collaborations – a growing element in our business plan; can the USG facilitate our efforts?
- Stable and predictable state funding – what does it take?

Key issues

The present circumstances

- Despite its unique nature, Georgia Tech is treated like the other 34 universities and colleges in the University System of Georgia.
- Nearly every university in the U.S News and World Report Top 40 operates under a single institutional governing board or research university system board. (System-wide governance: University of Wisconsin, Georgia Tech, UNC-Chapel Hill).
- Private universities are able to determine their own strategic destinies and maximize their revenues free from the state/regulatory restrictions imposed on public universities. 75% of the top 40 research universities are private (USN&WR)
- In-state tuition in Georgia is the lowest among the 16 southeastern states; tuition is set by the Board of Regents.
- Georgia Tech is one of the best at economic development, but rapid changes in the global economy and lack of ability to be responsive to the new environment puts Tech's effectiveness at risk.
- Over the past four fiscal years (2002-2005) Georgia Tech's state funding was cut by $47 million even as enrollment increased by over 1,500 students; also cut were the Equipment Trust Fund and support for our economic development activities.

Issues – human resources

- Georgia Tech recruits and fields faculty and staff in a national and international arena.
- The health insurance options offered by the USG focus on in-state HMOs and PPOs, do not meet the needs of Georgia Tech faculty and staff who work outside the state or the country.
- The USG-controlled, employee-paid basic life insurance coverage is inadequate for the salary level of most Georgia Tech faculty.
- Inability to offer optional retirement plans to all employees hampers Georgia Tech in recruiting academic support personnel from both industry and academia.
- For all new faculty hires, vitas, background documents, and hiring packages must be submitted. However, these materials are given only cursory review and the appointments are approved en masse.

Issues – construction process

- Over the past three years, the state has funded only five buildings for the 35 USG institutions.
- Standard processes for approval and construction of a state funded project are slow and cumbersome, resulting in significant delays (these can be documented).

– These delays result in increased construction costs and lost opportunity costs:

  A one-year delay in a $40 million building adds an average of $1.6 million to its construction cost.

  A one-year delay in a 100,000 gsf research building at Georgia Tech can be as high as $300 per square foot, or $30 million in lost research activity.

- Tech construction projects built outside the USG process show time and money can be saved. (Technology Square, and GCATT)

Issues – lease approvals

- The USG approval process averages almost six months and can take more than a year.
- Some property owners refuse to lease to USG institutions because the process is so onerous.
- Department of Defense research requires Georgia Tech to lease space at military bases in other states through a comprehensive federal lease approval process. Rather than acknowledging the federal approval process, the USG requires these leases to be approved a second time, with no consequence other than to meet their process requirements.

Issues – inability to set tuition

- All Georgia Tech students take lab courses as freshmen and sophomores; most continue a heavy load of lab courses throughout their academic careers. The additional cost of lab space and equipment is not reflected either in the distribution of state funds or in tuition as set by the Board of Regents.
- Not only does Georgia's in-state tuition rank lowest in the Southeast, but Georgia Tech's tuition ranks close to the bottom of its public peer set.

Tuition and fees for the current academic year	
Penn State University	$11,508
University of Michigan	$ 9,213
University of Illinois	$ 8,688
University of Minnesota	$ 8,622
Georgia Tech	$ 4,648

Issues – "One size fits all" policies

- The General Education Requirement of the USG is a "lowest common denominator" approach that is an impediment for Georgia Tech.
- The five-year comprehensive program reviews by the USG duplicate the extensive review process of official accreditation organizations such as SACS and ABET, resulting in unnecessary overhead costs.
- Georgia Tech receives frequent USG requests for data, usually on short notice. A conservative estimate of the annual cost of complying with these requests is $500,000 to $750,000. Yet Georgia Tech rarely receives any feedback relative to these exercises nor do they prompt any action by the USG.
- Although smaller institutions in the system may need help from the central office, the expertise of Georgia Tech's staff often exceeds that of the Board of Regents staff.

How Others Are Responding

New approaches to governance

Virginia

- The governor signed a bill in April that fundamentally changes the operating requirements for the state's public universities.
- Recognizing the impact of the decline in public funding for the state's public universities, Virginia lawmakers working with the UVa, Virginia Tech, and William and Mary established a model with more freedom from regulations and flexibility from burdensome state policies.

Colorado

- In addition to a voucher-like program, the state's public colleges and the Colorado Commission on Higher Education agreed to develop four-year performance contracts in which institutions pledge to meet specific goals, such as improving graduation and retention rates, in return for greater latitude in setting tuition and issuing their own bonds. The new law took effect on July 1, 2005.
- Legislation passed in 2003 provided $202 million to accelerate the completion of facilities at the University of Colorado Health Sciences Center campus at Fitzsimons.

Major initiatives to drive economic development

California

- California has committed over $3 billion to stem cell research.
- The state has provided over $500 million in seed money to support biotechnology initiatives.
- A seed capital fund, called CaliPERS Biotechnology Program, has been established with $500 million of state funds.

Florida

- The state has initiated a $30 million Technology Development Fund that creates university-based centers of excellence at $10 million each.
- $510 million in state and local funding committed in 2003 will establish a branch of the Scripps Research Institute, increasing Florida's ability to compete in the innovative economy.
- Scripps Florida is expected to bring in more than 6,500 jobs and increase the state economy by $3.2 billion.

Major initiatives to drive economic development (continued)

Massachusetts

- Governor Romney recently unveiled a $600 million dollar plan to boost job growth in the innovation economy.
- As a landmark economic stimulus in 2004, the Massachusetts State Legislature invested $35 million to create the John Adams Innovation Institute to promote the growth of Boston's innovation economy.

Michigan

- The governor has asked the state legislature to create a $2 billion fund to invest in cutting-edge technology businesses.
- A nonprofit regional collaboration named SPARK hopes to attract more high-tech companies built on innovation, making Ann Arbor more of an entrepreneurial hub and tripling the number of technology jobs within five years.

Major initiatives to drive economic development (continued)

North Carolina

- In 2004, the North Carolina Biotechnology Center released a new plan to grow North Carolina's biotech industry to 48,000 jobs by 2013 and 125,000 jobs by 2023 through a $650 million investment over five years.
- In 2003 the Golden LEAF Foundation and industry pledged $64.5 million to help build a statewide network of biomanufacturing training centers, jumpstarting the state's commitment to biotech.
- In 2000, voters approved $3.1 billion in bonds to improve facilities at the state's 16 public universities and 58 community colleges.

Washington

- Governor Christine Gregoire recently announced a proposal to create a $1 billion Life Sciences Discovery Fund to provide grants for promising university research in bioscience.
- The goal is to strengthen the state’s reputation as a bioscience center and create as many as 20,000 new jobs in the next 10-15 years.

Recommendations

Georgia Tech's efforts to enhance competitiveness and economic development

Context for recommendations:

- Georgia Tech has worked to re-invent itself to achieve its state mission to define the technological university of the 21st century.
- Georgia Tech has re-engineered its business processes and implemented modern business system; we have overhauled our approach to economic development to strengthen our ability to commercialize R&D and defend against off shoring.
- Georgia Tech has attracted and hired outstanding faculty and staff who, in turn, have significantly increased our capabilities for economic development and research activities.
- Georgia Tech has significantly improved educational outcomes (e.g., graduation and retention rates, job placement).
- Georgia Tech has financed and built more than $700 million in facilities without state support; we consolidated our economic development operations with the State Economic Development operations in Technology Square.
- In addition, Georgia Tech has expanded its reach around the globe with sites in France, Singapore, Shanghai, and through its Global Learning Center.

Recommendations

Goal: Enable Atlanta and Georgia to compete more effectively in an increasingly global and technology based economy.

- Change governance and administrative policies to enable agile and quick responses to the changing competitive environment.
  - Allow Georgia Tech to establish and maintain its own policies relating to compensation/benefits/HR.
  - Allow Georgia Tech to develop and manage its own procurement policies, and processes.
  - Allow Georgia Tech more flexibility to generate, manage, and use revenues.
  - Allow Georgia Tech to establish and implement policies on construction, leasing, and financing.
  - Create new policies to enable Georgia Tech to engage in innovative public/private partnerships and collaborative efforts.
- Encourage state investments to strategic innovation-based industries to further develop high-tech economic infrastructure.
- Georgia Tech acknowledges its willingness to be both responsible and accountable regarding the above recommendations.

Expected Long Term Outcomes

If the recommendations are accepted, it is expected that:

- The Atlanta and Georgia economies will become more competitive and prosperous, with more and higher paying jobs.
- Georgia Tech will be placed in am improved competitive position.
- Georgia Tech's ability to contribute to and expand economic development efforts will be enhanced.
- The research enterprise will expand, a key characteristic of economically successful regions.
- Access to intellectual capital will improve.
- Ability to create private-public partnerships will be improved.
- Infrastructure that is primed to increased economic growth will expand.